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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

DUDASH, D

ART UNIT

PAPER NUMBER

1762

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09/08/99

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
09/098,748

Applicant(s)  
Hayashi et al.

Examiner  
D. L. Dudash

Group Art Unit  
1762



☒ Responsive to communication(s) filed on 8-20-98, 10-13-98 and 3-11-99

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-30 is/are pending in the application.

Of the above, claim(s) 1-7, 10, 11, 13, and 27-30 is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 8, 9, 12, and 14-26 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☒ Claims 1-7, 10, 11, 13, and 27-30 are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☒ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 6

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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*Election/Restriction*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-7,10,11,13, drawn to a coated article, classified in class 428, subclass 457.
  - II. Claims 8,9,12,14-26 drawn to a composition, classified in class 252, subclass 500.
  - III. Claims 27-30, drawn to a method of coating, classified in class 427, subclass 421.
2. The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as for forming a film or as a pigment for use in coloring paint and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.
3. Inventions III and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process such as lamination or molding.

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4. Inventions II and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product as claimed can be used in a materially different process of using that product, such as casting a film.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

6. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II or III and the search required for Group III is not required for Group I or II, restriction for examination purposes as indicated is proper.

7. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I or III, restriction for examination purposes as indicated is proper.

8. During a telephone conversation with John K. Pike on 19 August, 1999 a provisional election was made with traverse to prosecute the invention of Group II, claims 8,9,12,14-26.

Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-7,10,11,13,27-30 are hereby withdrawn from further consideration by the examiner, 37

CFR 1.142(b), as being drawn to a non-elected invention.

9. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(I).

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***Claim Rejections - 35 USC § 112***

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 8, 12, 14-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Claim 8 is vague and indefinite due to “fine”, which is subjective. Claim 12 is confusing and indefinite due to the term “dispersed solution” and due to “*comprising* a solvent containing a *dispersant* said solvent *comprising* a dispersed solution formed by *dispersing* a fine metal powder”. It is unclear what a “dispersed solution” means. Further, it is unclear what is meant by the solvent comprising a dispersed solution, since the dispersed solution is formed by dispersing a fine metal powder (dispersed into what?). The claim reads on the solvent comprising a dispersed metal powder, which does not seem logical, metal powder not being conventionally used as a solvent. Claim 14 is rejected for analogous reasons. Claim 12 is vague and indefinite due to “fine metal powder” which is subjective; the claim recites a size range for the primary particle size but is silent regarding the secondary particle size. According to applicant’s disclosure “particles of the fine metal powder are generally present in the form of secondary particles formed through aggregation of primary particles (individual particles).”

Claim 16 is vague and indefinite due to “said composition is substantially in the absence of a binder”. It is unclear what the “substantially” is modifying. Claim 18 is vague and indefinite due to “dispersed solution”. Claim 19 is vague and indefinite due to lack of antecedent basis for “the dispersant”. The claim is further indefinite and confusing due to “and is used by diluting with a solvent”, as the claim is directed to a composition, not a method of use. Further, the composition is already recited as being an aqueous dispersion and thus already contains water, which is a solvent. Finally, the composition recites a concentration range for the fine metal powder and the dilution as recited in the last clause renders the concentration indefinite, as it is unclear how much

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solvent is used for dilution. Claim 24 is vague and indefinite due to being unduly alternative. Further, the claim contains an incorrect Markush group due to "an alloy comprising" and "a mixture comprising", as these terms are open to components outside the metals recited.

***Claim Rejections - 35 USC § 102***

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 8 and 16 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Wolfrum *et al.* (4,983,420).

15. Wolfrum teaches a black coating composition of tungsten particles and aluminum oxide in suspension in a solvent, the tungsten particles having an average particle size of 1.5 to 3 microns.

***Claim Rejections - 35 USC § 103***

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

18. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura *et al.*

Kitamura *et al.* (4,387,115) teaches compositions comprising a metallic copper powder, a copper compound, a dihydroxy benzene compound and a curable resin component, including silicone resin. The copper powder in the examples has average particle sized of about 15 to 20 microns. The compositions may further comprise additives such as stabilizers, reactive diluents, such as butyl glycidyl ether, inorganic bases, acids and pH controllers, thickening agents, surface active agents, solvents such as water, toluene, MEK, ethylene glycol monomethyl ether and ethylene glycol monoethyl ether, paraffin wax, carbon black, etc..., suggesting the surfactant of claim 18 and meeting the compound of claim 22. The cured products may also be protectively treated, such as with a silicone type treating agent. The reference lacks an example of black powder in the coating composition, however it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used carbon black in the composition, as suggested by the reference, because of the logical expectation of coloring the composition black and further because the carbon black would have been expected to contribute to the desired conductivity of the composition. See entire disclosure.

19. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurano *et al.*

20. Kurano *et al.* (5,632,833) discloses an electrically conductive paste composition which contains a solvent, a metal powder including at least silver powder, an organic titanium compound, which may be a titanate coupling agent and an organic binder, meeting a titanate

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based coupling agent. Palladium powder may be mixed with the silver powder, the silver powder having a diameter in the range of 0.2-0.5 microns and the palladium powder 0.1 to 0.3 microns, rendering the secondary particle size limitations of instant claim 14 obvious, as the reference is silent as to whether the particle size referred to is primary or secondary, thus it can be interpreted as either. See col.1, line 66-col.2, line 39; col.3, line 43-col.4, line 40; col.6, line 64-col.7, line 54.

21. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurano *et al.* as applied to claim 14 above, and further in view of Kitamura *et al.* Kitamura teaches carbon black as an additive to a composition containing a metal power.

Kurano lacks the black powder in the composition, however it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used carbon black in the composition, as suggested by Kitamura, because of the logical expectation of coloring the composition black and further because the carbon black would have been expected to contribute to the desired conductivity of the composition..

22. Claims 12, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurano *et al.* as applied to claim 14 above, and further in view of Sullivan (4,950,423).

23. Kurano *et al.* (5,632,833) discloses an electrically conductive paste composition which contains a solvent, a metal powder including at least silver powder, an organic titanium compound, which may be a titanate coupling agent and an organic binder, meeting the limitation of instant claims 15 of a titanate base coupling agent. Kurano lacks the solvents of claim 12.

24. Sullivan teaches water-based conductive paint, in latex or dispersion form, having a metal particulate of gold, silver, copper, nickel or the like. It is preferred that the particles, when in flake form, be not more than 1.5 microns in thickness. The aqueous composition may contain co-solvents which are disclosed in col.9, line 60-col.11, line 18, including "certain low molecular weight alcohols such as isopropyl alcohol; 4-hydroxy-4-methyl-2-pentanone" and further disclose that "Paint adhesion is particularly a concern with plastics...and may pose problems requiring trial and error solvent selection, and such selection methods should be regarded as the norm for



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application to these...polycarbonates". Further, Sullivan discloses that The paint "may include a particulate non-metallic filler such as carbon, silica...or the like as hardener....Carbon...may be introduced into the paint in quantities up to 10% by weight....Any suitable or conventional particulate carbon, colloidal silica or like material tending to remain in suspension...can be employed." The metal powders are added in an amount to give the desired resistivity of not more than 10 ohms/square and in the examples meet concentration of claim 19. See: col.11, line 66- col.12, line 24; examples.

25. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the composition of Kurano by determining a suitable co-solvent from among those suggested by Sullivan, because of the teaching that trial and error is the norm for coatings intended to be used on plastics, such as the transparent polycarbonates, as the intended substrates of the instant composition are transparent.

26. Claims 18,20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitamura as applied to claim 8 above, and further in view of Cross *et al.* and Sullivan.

Kitamura *et al.* (4,387,115) teaches compositions comprising a metallic copper powder, a copper compound, a dihydroxy benzene compound and a curable resin component, including silicone resin. The copper powder in the examples has average particle sized of about 15 to 20 microns. The compositions may further comprise additives such as stabilizers, reactive dilutents, such as butyl glycidyl ether, inorganic bases, acids and pH controllers, thickening agents, surface active agents, solvents such as water, toluene, MEK, ethylene glycol monomethyl ether and ethylene glycol monoethyl ether, paraffin wax, carbon black, etc..., suggesting the surfactant of claim 18 and meeting the compound of claim 22. The cured products may also be protectively treated, such as with a silicone type treating agent. The reference lacks an example of black powder in the coating composition, however it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used carbon black in the composition, as suggested by the reference, because of the logical expectation of coloring the composition black

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and further because the carbon black would have been expected to contribute to the desired conductivity of the composition. See entire disclosure. The reference lacks the alcohols of claim 20 and amount of powder as in claim 18.

Cross et al.(3,775,176) teaches a coating composition comprising a film-forming thermoplastic polymer and electrically conductive *metallic particles*, in an amount of at least 20% by volume, having a largest dimension in the range of 0.02 to 50 microns, rendering the 20 nm size limitation of claims 18 and 19. Useful metal particles include those of Cu, Sn, Ni, silver, iron, lead, cadmium, chrome, zinc, and mixtures and alloys of these with each other (col.3, lines 11-22), meeting the metals of claims 24 and 25. The composition also contains a leachable component, including water-miscible organic and inorganic liquids such as: *ethanol*, dioxane, acetone, *dimethyl sulfoxide*, ethylene glycol, propylene glycol, and the like, meeting instant claims 20, 22 and suggesting the isopropylglycol of claim 12 (col.4, lines 18-68).

Sullivan teaches water-based conductive paint, in latex or dispersion form, having a metal particulate of gold, silver, copper, nickel or the like. It is preferred that the particles, when in flake form, be not more than 1.5 microns in thickness. The aqueous composition may contain co-solvents which are disclosed in col.9, line 60-col.11, line 18, including "certain low molecular weight alcohols such as isopropyl alcohol; 4-hydroxy-4-methyl-2-pentanone" and further disclose that "Paint adhesion is particularly a concern with plastics...and may pose problems requiring trial and error solvent selection, and such selection methods should be regarded as the norm for application to these...polycarbonates". Further, Sullivan discloses that The paint "may include a particulate non-metallic filler such as carbon, silica...or the like as hardener....Carbon...may be introduced into the paint in quantities up to 10% by weight....Any suitable or conventional particulate carbon, colloidal silica or like material tending to remain in suspension...can be employed." The metal powders are added in an amount to give the desired resistivity of not more than 10 ohms/square and in the examples meet concentration of claim 19. See: col.11, line 66-col.12, line 24; examples.

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the composition of Kitamura by determining a suitable co-solvent from among those suggested by Cross and Sullivan, by trial and error, as strongly suggested by Sullivan, for substrates such as the transparent polycarbonates, as the intended substrates of the instant composition are transparent.

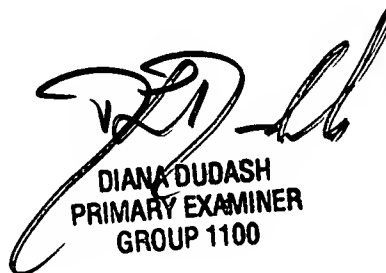
*Conclusion*

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Savit (4,430,382) see col.2, lines 19-27; col.4, line 11-28; col.5, line 24-col.6, line 14.

Kydd (5,882,722) teaches a mixture of a suspension of colloidal metal powder with a diameter of about 10 to 40 nanometers in an organic vehicle with metallo-organic decomposition compounds, for producing conductive coatings. See the entire disclosure.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to D.L. Dudash whose telephone number is (703) 308-2328.

  
DIANA DUDASH  
PRIMARY EXAMINER  
GROUP 1100